A Political Economic Analysis of Free Trade Agreements: Temporal and Distributional Effect

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Abstract

We examined how domestic political factors influence bilateral negotiations such as FTAs. We studied two kinds of impact, one is the impact that domestic political factors have on the negotiation period and the other is the impact on the outcome of negotiation. Both theoretically and empirically, we show that the period of negotiation decreased as the proportion of seats taken by ruling party, which moves in opposite direction to the domestic political constraints, increased. In addition, it is shown that the level of concession from partner country increases as domestic political constraint increases.

1 Introduction

Free Trade Agreement (FTA) is an agreement that allows exclusive preference to the member countries, such as reduction or removal of tariffs. While FTAs focus on removal of tariffs within the area, typical examples of more advanced forms of economic integration are: (i) Customs Union that applies a common customs tariff rate to countries not in the free trade area in addition to free trade within FTA region, (ii) Common Market that allows free movement of production factors within member countries, and (iii) Single Market with political and economic integration such as the adoption of common currency or establishment of common assembly.

Looking at the trend of the expansion in regional trade agreements including FTAs, there were 5 cases before 1970 and 12 during the 1970s, and the numbers have increased rapidly to settle 64 and 106 cases were settled in the 1990s and after 2000, respectively. Regional trade agreements have been constantly increasing after the introduction of WTO system. As of 2005, intra-regional trade among the countries within the regional trade agreements counted for more than 50% of the world trade volume. In this growing trend towards FTA, the Korean government has been vigorously pushing ahead with FTAs with many countries. Korea completed FTAs with Chile (effectuated on April 1, 2004), Singapore (effectuated on March 2, 2006), and six countries in EFTA (effectuated on September 1, 2000). Korea also reached an agreement with the US in April of 2007, and is currently in negotiation processes with EU, Canada, India and many other partner countries.[1]

The purpose of this paper is to analyze the effect that political variables such as political system and proportion of seats taken by the ruling party in each country have on the time period and results of FTA negotiation in theoretical and empirical methods. In Section 2, we review literature on the relation between domestic politics and international negotiation. We identify theoretical and empirical deficiency in current literature. The first one is that literature does not say anything about the relation between the duration of negotiation from

[1]Refer to FTA Webpage of the Ministry of Foreign Affairs and Trade. $http://www.fta.go.kr/index.php$

the start to the effectuation and domestic political factors. Time is a scarce resource for both individuals as well as a state. Hence, it will be useful to know how they are related.

Theoretical and empirical analyses using political economy approach, which are a key part of this paper, are conducted in Section 3 and 4, respectively. In the case of FTA, which aims to create economic benefits between countries, we examine how domestic political constraints affect the time period from inception to effectuation of FTA negotiation and increase ratio of export and import as a result of FTA. In order to reach this research goal, we discuss a bargaining model theoretically, draw testable hypotheses based on that, and collect and analyze data on all FTAs effectuated so far. In this research, it is confirmed that through theoretical and empirical analyses, higher the proportion of seats taken by the ruling parties of the member countries, the time spent until effectuation of FTA shortens, and conversely, lower the proportion, more time is needed for effectuation. Furthermore, our empirical result also confirms the Schelling conjecture: the more domestic constraint, the more share or concession from negotiation. Section 5 briefly discusses policy implications and concludes.

2 Literature

Most literature on international political economics have focused on the relationship between international power structure and trade, the effect of international institution to promote cooperation between trading partners, the impact of international market conditions upon domestic economies, and so on. On the contrary, scholars of international economics have noticed that a country's trade policy needs to be seen in terms of international political relations and international market structure. Most of them, however, also failed to recognize that domestic conflicts and political institutions influence trade policies.

Schelling (1960) first pointed out the importance of domestic politics in the international politics. In his book, *The Strategy of Conflict*, he introduced following intuitive conjecture.

In international negotiations, one of the negotiators can say "all the agreements need to be approved by my legislature." Such a situation gives advantageous position to the negotiators compared with when legislative approval is not required for agreement's effectiveness. This is called "Schelling conjecture" and it is cited and developed in many ways by international relations scholars.

Until Putnam (1988) published his article on the "two-level game," however, there was almost no theoretical and empirical discussion on under what conditions domestic political constraints would help in international negotiations. The paper by Putnam rekindled scholars's interests in Schelling conjecture and recent papers (Iida, 1996; Milner, 1997; Milner and Rosendorf, 1997; Mo, 1994, 1995; Tarar, 2001, 2005) theoretically studied the development of international agreement under the background of domestic politics.

Milner (1997) showed that Schelling conjecture does not hold when applying Nash bargaining solution to the spatial policy model. This result is not surprising simply because Nash bargaining solution assumes cooperative situation with complete information. On the other hand, Mo (1995) proved that domestic constraints can be beneficial in international negotiations by using non-cooperative approach. The caveat of his model, however, is that he analyzed the situation where only one negotiating partner has domestic constraints while the other partner does not have such constraints at all. As such, it does not give us an answer to what will happen when both negotiating partners have domestic constraints. Milner and Rosendorf (1997) reached a quite different conclusion from Milner (1997). They argued that when there is domestic constraints by legislature, domestic constraints can help international negotiation only if administrative preference is not too much different from legislative preference. This result is quite different from the original Schelling's idea that administration can take an advantageous position in international negotiations due to domestic constraints imposed by legislature which has different preference from its own.

Iida (1996) analyzed the Rubinstein bargaining model in which a country has domestic constraint while the other country does not. In other words, his model assumes that one

country is dictatorial. His result, however, confirms Schelling conjecture. Motivated by such incompleteness in Iida (1996), Tarar (2001, 2005) extends Iida's model to incorporate the cases where both countries are democratic. He showed that when domestic constraint of negotiating partner is medium or low, the country with high domestic constraint can take advantage of domestic constraint as a threat to get larger share from the other country. When both countries have the same level of domestic constraint, neither one can get benefit from domestic political constraint. This interdependency of domestic constraints on the international bargaining outcome is intuitive.

Previous literature have two major deficiencies. One is that there was no empirical study analyzing theoretical results and the other is a more theoretical problem. In the previous literature, international negotiation immediately reaches an agreement once negotiating partners sit at the table. Such an immediate agreement problem originates from the use of Rubinstein (1982)'s alternating offer bargaining model which has an immediate agreement feature derived from stationary structure and infinite horizon. Generally, international negotiations take substantial amount of time and hence, inefficiency from such delay takes place. In the Rubinstein's framework, such inefficiency could not be analyzed and furthermore, systematic analysis could not be done regarding the relationship between delay and domestic constraints in international negotiations. In this paper, we analyze how these factors relate to each other theoretically and empirically as well.

Regarding the delay of agreement, Ma and Manove (1993) analyze a situation where with exogenous deadline, after which bargaining participants' payoffs go down to zero, players have uncertainty on when one player's offer will reach the other party, and the players only know its probability distribution. In such a situation, a negotiation participant cannot control the chance of opportunity to make an offer simply because an offer early in the negotiation to the counterpart can delay a counteroffer. On the other hand, if an offer is made late and it reaches the other party before the deadline then the counter party cannot help but to accept that offer because the counteroffer may not reach the counterpart before the deadline. Due

to this logic there is an incentive for each participant to delay making an offer. Ma and Manove (1993) show that in a symmetric Markov-perfect equilibrium each party rejects an offer early in the negotiation and makes an offer close to the deadline and accepts it if it arrives on time. In their model, expected division of pie is close to $\frac{1}{2}$. While they show one possible environment for strategic delay in negotiation, it is unrealistic to assume that participants cannot control when their offer reach the other party.

Another model with a strategic delay is introduced by Cramton (1992). Unlike Ma and Manove (1993), he does not assume exogenous deadline. Instead, in his model, negotiation participants do not know the other party's characteristics. Acceptability of an offer depends on the receiver's characteristics. If an offer is high enough to meet a certain type's requirement, then it will be accepted. Since each negotiant has uncertainty about the other, each participant tries to gather information by making an offer. From this uncertainty, players have an incentive to delay agreement strategically. This setting, however, is not realistic for negotiations between countries with constant political, diplomatic, and trade relations.

The complete information model with strategic delay is analyzed by Fershtman and Seidmann (1993) and is extended in this paper. They deal with an environment where players have complete information with exogenous deadline. Players can make an offer and decide whether or not accept it until the deadline, after which payoff to both players dissipates. They make an important assumption (which they call *endogenous commitment*)that each participant does not accept an offer worse than or equal to whatever offer rejected previously.

3 The Model

In this study we extend Fershtman and Seidmann's model (1993) to deal with the relationship between domestic politics and international negotiation on free trade agreement in terms of how long it takes to reach an agreement and how economic surplus is divided between negotiating countries. To do this, we modify Fershtman and Seidmann (1993) to incorporate

the idea of domestic constraints used in Tarar (2001, 2005) and also reinterpret results analyzed in this paper to our purpose.

3.1 Two-level Game with Deadline

As usual bargaining models since Rubinstein (1982), we assume that involving countries in free trade negotiation try to divide economic surplus from free trade agreement, which is normalized to 1.[2] Negotiating countries are assumed to have risk-neutral preferences. We denote countries A and B. In general, countries study the effect of free trade agreement on their economy for substantial amount of time before they actually start negotiating. It is reasonable to assume that countries have complete information.

Unlike the usual bargaining setup in which once negotiating parties agree on some division of a pie, the agreed share of the pie is divided, even after agreement by trade representatives the agreement needs to be approved by each country's legislature.[3] Otherwise, it will not be effective. Hence, we assume that if agreement is not approved by both countries' legislature the countries get zero. In other words, both countries can get economic gain only from existing trade condition but not from free trade environment.

Bargaining proceeds sequentially from randomly chosen player's offer. In each period, one player is chosen to make an offer with equal chance, i.e., $\frac{1}{2}$. One party makes an offer, then the other party decides whether to accept it or not. If the offer is accepted, then the agreement moves on to the legislative stage, at which each country's legislature vote up or down on the agreement. If the agreement is approved by both countries' legislatures then it comes into effect and players get the share of the pie as divided in the agreement, otherwise they get zero payoff.

Periods are denoted as $t = 1, 2, 3, \ldots$. In most democracies elections are held on regular basis. A political leader (president or prime minister depending on the political system)

[2]This assumption is made for expositional and analytic simplicity but it is not assuming that economic value from free trade agreement is fixed or dynamically not changing.

[3]Countries such as one-party state, military junta, or absolute monarchy are not required to get approval from their legislature. Our model covers such cases too.

who initiates free trade negotiation with certain country wants to get reelected or at least support a candidate from the same party to be elected in the next election. Since the success of free trade negotiation is considered as a political achievement the political leader has every incentive to finish up the negotiation before the term ends. Thus, the next election time can be considered as a negotiation deadline. It is reasonable and realistic to assume that there exists an exogenous deadline which both countries are aware of. We denote such a deadline as T. Each country is assumed to have the same discount factor, $\delta \in [0, 1)$.

In period t, a proposer is selected with probability $\frac{1}{2}$ and the chosen proposer makes an offer such as what portion of the pie the other country will get.[4] After the proposal, the other country's trade representative decides whether to accept it. If the proposal is accpeted, the agreement goes to each country's legislature for the legislative approval. If the agreement is approved by both countries' legislature, each country gets the payoff according to the agreement. In the other hand, if the agreement is voted down by, at least, one country's legislature then each country gets zero. The bargaining game ends when a deadline or agreement is reached regardless of legislatures' approval. Otherwise, the game proceeds to $t + 1$ period.

As mentioned above, since legislative approval is required for the free trade agreement to take effect, legislative preference is imposed on trade representatives to meet from the start of negotiation. We denote such domestic constraints imposed by legislatures as α and β. In addition, we assume that $\alpha + \beta < 1$.[5] A political leader is assumed to demand more than the legislature's demand. We assume political leader's demand in country A as $\alpha_p = \alpha + \epsilon_\alpha$ and $\beta_p = \beta + \epsilon_\beta$ for country B, where $\epsilon_\alpha, \epsilon_\beta > 0$. While the legislature's demand is inflexible because it is related to electorate's demand to the legislature, the political leader's demand is flexible in the sense that she is not related to specific electorates or interest groups.

As in Fershtman and Seidmann (1993), we assume that in period t, a negotiation partic-

[4]The remainder goes to the proposer.

[5]When $\alpha + \beta > 1$, which means that the sum of legislature's demands of two countries exceeds the size of the pie, any agreement between two trade representatives will be disapproved by, at least, one legislature. So, it will not be rational to start the trade negotiation in the first place.

ipant does not accept any offer that is worse (equivalently, less) than any offer she rejected in any period from 1 to $t-1$. This assumption is called *endogenous commitment*. In other words, when a participant rejects an offer, it means that the participant commits to reject any offer below that offer. Due to this assumption, we do not retain stationary structure which is a main feature of usual bargaining games.[6] Endogenous commitment is formally defined as follows. Suppose that $\alpha_t = \max\{\alpha_1, \ldots, \alpha_{t-1}\}$ and $\beta_t = \max\{\beta_1, \ldots, \beta_{t-1}\}$ denote the maximal offers that A and B rejected before period t. Then, in period t, A and B reject any offer less than α_t and β_t.

We assume that $\alpha \neq 0$ and $\beta \neq 0$ while Fershtman and Seidmann (1993) focus on $\alpha = \beta = 0$, i.e., there is no domestic constraint at all at the start of negotiation. Further, without loss of generality, we assume that $\alpha > \beta$. For comparative static analysis, we assume that discount factor δ's distribution function is $F(\delta)$, which is supported over $[0, 1)$ and strictly increasing. We call the bargaining game defined above as $\Gamma_T(\alpha, \beta)$.

3.2 Analysis

In game $\Gamma_T\{\alpha, \beta\}$, each country's strategy is defined as follows. Country A's pure strategy in period $t-1$ defines β_t which A offers to B when A is chosen to make an offer, and whether to accept B's offer when B is selected to offer. Country B's strategy is defined analogously. Mixed strategies are allowed. Equilibrium concept is subgame-perfect equilibrium.[7]

3.2.1 Condition for Agreement Delay

First we discuss under what conditions agreement is delayed. Note that we assume that the sum of domestic constraints is less than 1, i.e., $\alpha + \beta < 1$. We claim that there is minimal discount factor, $\delta(\alpha, \beta, T)$ at which in period 1 an offer is accepted with positive probability regardless which country makes the offer. At any discount factor greater than

[6] The stationary structure makes analysis simple because any subgame is equivalent to the whole game and so this fact makes easy to calculate continuation value.

[7] The existence of equilibrium is proved in Fershtman and Seidmann (1993).

such a discount factor, i.e., $\delta \in (\delta(\alpha, \beta, T), 1)$, a first period offer being accepted cannot be a part of equilibrium.

To see this, suppose that there exists an equilibrium in which a period 1 offer is accepted with positive probability. Consider the case where country A's offer $\tilde{\beta}$ is accepted by B. First of all, the offer must be greater than or equal to country B's domestic constraint β, i.e., $\tilde{\beta} \geq \beta$. Further from assumption on the demand of B's political leader, the offer should be greater than or equal to $\beta + \epsilon_\beta$, i.e., $\tilde{\beta} \geq \beta + \epsilon_\beta$. Since country B should prefer accepting the offer to rejecting it or be indifferent, the following condition should hold.

$$\tilde{\beta} \geq \frac{1}{2}\delta^T(1 - \alpha + \tilde{\beta}). \tag{1}$$

The right hand side of the above inequality comes from the following logic. Note that political leader's demand is flexible while legislative demand, i.e., domestic constraint is inflexible. Suppose that after rejecting A's offer $\tilde{\beta}$, country B uses following strategy and country A uses an analogous strategy. Until period $T-1$, B rejects all offers by A and makes offers which are less than or equal to A's domestic constraint α. At T, B makes an offer α to A if B is chosen to be a proposer, and accepts A's offer if it exceeds or equals to $\tilde{\beta}$. Country B can get $1 - \alpha$ in the first case and $\tilde{\beta}$ in the second case. Discounted expectation of shares from these two cases is the right hand expression.

To be incentive compatible for country A to make such an offer, making the offer which is accepted by B is better than delaying agreement to the last period. Hence, following condition should be met.

$$1 - \tilde{\beta} \geq \frac{1}{2}\delta^T(1 - \beta + \alpha). \tag{2}$$

The condition of $\tilde{\beta}$ satisfying inequalities (1) and (2) is as follows.

$$\frac{\delta^T(1-\alpha)}{2-\delta^T} \leq \tilde{\beta} \leq \frac{1}{2}(2 + \delta^T(\beta - \alpha - 1)). \tag{3}$$

In above inequality, it is straightforward to see that left hand side is increasing in δ and

right hand side is decreasing in δ.[8] Thus, above condition implies that if discount factor is above a certain level, i.e., $\delta > \delta_1(\alpha, \beta, T)$, there is no $\tilde{\beta}$ satisfying the above condition. In other words, for $\delta \in (\delta_1(\alpha, \beta, T), 1)$, country A rejects any offer from country B in period 1.

We can apply this logic to country B and analogous condition is defined as follows.

$$\frac{\delta^T(1-\beta)}{2-\delta^T} \leq \tilde{\alpha} \leq \frac{1}{2}(2+\delta^T(\alpha-\beta-1)). \tag{4}$$

From the above condition we can define $\delta_2(\alpha, \beta, T)$. Let $\delta(\alpha, \beta, T) = \max\{\delta_1(\alpha, \beta, T), \delta_2(\alpha, \beta, T)\}$. Then, for any $\delta \in (\delta(\alpha, \beta, T), 1)$ there exists no equilibrium in which period 1 offer is accepted with positive probability.

Implication of this result is that the more patient negotiating participants are, the longer it takes from the start of negotiation to the effectuation of free trade agreement. The opposite is true also. Related to this result, given the discount factor, $\delta(\alpha, \beta, T)$ which guarantees delay, even if domestic constraints (α and β) are decreased, for $\delta \in (\delta(\alpha, \beta, T), 1)$ there exists no equilibrium in which agreement is reached in period 1.[9] In other words, under the given discount factor satisfying $\delta \in (\delta(\alpha, \beta, T), 1)$, negotiation does not end in early agreement even if participating countries lower their domestic political constraints and give more concession to the other country.

3.2.2 Deadline Effect on Delay

We consider how the length of periods to deadline T affects possibility that agreement is reached early in the bargaining process. We claim the following.

[8] If we differentiate each side with respect to discount factor, then we have

$$\frac{\partial}{\partial\delta}\frac{\delta^T(1-\alpha)}{2-\delta^T} = \delta^{T-1}\frac{T-T\alpha}{2-\delta^T} + \frac{(T-T\alpha)\delta^{T-1}}{(2-\delta^T)^2} > 0$$

and

$$\frac{\partial}{\partial\delta}\frac{1}{2}(2+\delta^T(\beta-\alpha-1)) = \frac{\delta^{T-1}T(\beta-\alpha-1)}{2} < 0$$

since we assume that $\alpha+\beta<1$ and $\alpha, \beta < 1$.

[9] A similar result is presented in Lemma 1 of Fershtman and Seidmann (1993).

Given domestic constraints and discount factor, as deadline T increases, negotiation is more likely to end in the early stage. As deadline decreases, it is less likely to reach an agreement in the early period.

To see this, we consider deadline T (an integer) as a real number for analytic convenience. If we differentiate both ends of inequality (3) with respect to T, then we have

$$\frac{\partial}{\partial T}\frac{\delta^T(1-\alpha)}{2-\delta^T} = (\ln\delta)\delta^T\frac{1-\alpha}{2-\delta^T} + (\ln\delta)\frac{\delta^{2T}}{(2-\delta^T)^2} < 0 \tag{5}$$

and

$$\frac{\partial}{\partial T}\frac{2+\delta^T(\beta-\alpha-1)}{2} = \frac{1}{2}(\ln\delta)\delta^T(\beta-\alpha-1) > 0. \tag{6}$$

We know that as T increases, the gap between end expressions in inequalities (3) and (4) increases. Thus, discount factor $\delta(\alpha,\beta,T)$ defined earlier increases. Probability that negotiation reaches an agreement in the early stage, $F(\delta(\alpha,\beta,T))$ increases as T increases. The opposite is also true. This result implies that given a deadline the closer negotiation start point is to the deadline, the less likely negotiation is to reach an agreement immediately. Rather distant negotiation starting point increases the probability that negotiation will end promptly.

3.2.3 Condition for Delay to Deadline

In this section, we consider conditions under which negotiation takes the whole period of time until the deadline. First, consider the condition under which country A makes an offer $\hat{\beta}$ which will be rejected in the first period. When A makes offers less than B's domestic constraint, A can expect $\delta^T(\alpha+1-\beta)/2$ at the last period. On the other hand, A knows that B can expect $\delta^T(\hat{\beta}+1-\alpha)/2$ when B rejects an offer $\hat{\beta}$ made by A itself. Hence, what A can expect when B rejects its offer $\hat{\beta}$, cannot exceed $1-\delta^T(\hat{\beta}+1-\alpha)/2$. When

$$1-\frac{\delta^T(\hat{\beta}+1-\alpha)}{2} \geq \frac{\delta^T(\alpha+1-\beta)}{2} \tag{7}$$

is satisfied, A's making an offer $\hat{\beta}$ which will be rejected can be a part of equilibrium. If we rewrite this condition, we have

$$\hat{\beta} - \beta \leq \frac{2(1-\delta^T)}{\delta^T}. \tag{8}$$

By a similar logic, we can derive the condition for B as

$$\hat{\alpha} - \alpha \leq \frac{2(1-\delta^T)}{\delta^T}. \tag{9}$$

Now we denote the discount factor, $\delta(\alpha, \beta, T)$ defined earlier as $\tilde{\delta}_1(\alpha, \beta, T)$. Then for all $\delta > \tilde{\delta}_1(\alpha, \beta, T)$ and $t \leq T$, in a bargaining game $\Gamma_t(\alpha, \beta)$, there is no equilibrium in which agreement is reached in the first period. In other words, for $\delta > \tilde{\delta}_1(\alpha, \beta, T)$, when the deadline is set to be $t < T$ and a participating country makes a sufficiently high offer, i.e., $\alpha_t > \alpha$ or $\beta_t > \beta$, agreement can be reached before the deadline T.

Following the logic laid out previously, country A's rejected offer β_t in period t should satisfy

$$\beta_t - \beta_{t-1} \leq \frac{2(1-\delta^{T-t+1})}{\delta^{T-t+1}} \leq \frac{2(1-\delta^T)}{\delta^T}. \tag{10}$$

An analogous logic can be applied to B. Since our bargaining game $\Gamma_t(\alpha, \beta)$ has domestic constraints from the first period, in order for all offers made by country A to be rejected the following condition should hold.

$$\max\{\beta, \max_{1 \leq t < T}\{\beta_t\}\} < \frac{2T(1-\delta^T)}{\delta^T} \tag{11}$$

The right hand side expression in the above inequality is monotone decreasing in discount factor. The above condition implies that if all offers by country A is less than the right hand expression, then country B rejects them all in equilibrium. Let $\tilde{\delta}_2(\alpha, \beta, T)$ satisfy $\frac{2T(1-\delta^T)}{\delta^T} = \min\{\alpha, \beta\} = \beta$. Then for all $\delta > \tilde{\delta}_2(\alpha, \beta, T)$ and all $t < T$, an offer at period t is less than domestic constraints, i.e., $\alpha_t < \alpha$ and $\beta_t < \beta$.

Now we define $\tilde{\delta}(T) = \tilde{\delta}_2(\alpha, \beta, T)$ instead of $\max\{\tilde{\delta}_1(\alpha, \beta, T), \tilde{\delta}_2(\alpha, \beta, T)\}$. The reason

is that if we use the latter definition we have incompatible behaviors in equilibrium. To see this, suppose $\tilde{\delta}_1(\alpha, \beta, T)$ is greater than $\tilde{\delta}_2(\alpha, \beta, T)$. The first equilibrium behavior, then, is that each negotiating country makes an offer that is less than the other country's domestic constraint whenever it has an opportunity to propose. The second one is that period 1 proposer makes an offer that is greater than the other country's domestic constraint, and the other country accepts it. These two behaviors are incompatible. Further, for all $\delta > \tilde{\delta}_2(\alpha, \beta, T)$ each country has no incentive to make an offer which will be accepted in period 1. We have a contradiction. Hence, $\tilde{\delta}_1(\alpha, \beta, T)$ cannot be greater than $\tilde{\delta}_2(\alpha, \beta, T)$.

In sum, for equilibria where countries agree immediately, discount factor should be less than $\tilde{\delta}_1(\alpha, \beta, T)$ while for equilibria in which agreement is not reached until the deadline discount factor should be greater than $\tilde{\delta}_2(\alpha, \beta, T)$. When discount factor lies between the above two discount factors, agreement can be delayed until some period between 2 and T.

3.3 Comparative Statics

Now we claim that in an equilibrium where agreement is delayed until the deadline, expected share to each country depends on domestic constraints. Given a discount factor $\delta > \tilde{\delta}_2(\alpha, \beta, T)$, if we apply backward induction logic, it is easy to show that expected shares are $\frac{\delta^T(1-\beta+\alpha)}{2}$ for country A and $\frac{\delta^T(1-\alpha+\beta)}{2}$ for country B. Hence, the more domestic constraint, the larger expected share in equilibrium.

As we discussed earlier, since $\frac{2T(1-\delta^T)}{\delta^T}$ is a decreasing function in δ, the increase of country B's domestic constraint β, results in the decrease of $\tilde{\delta}(T)$. Hence, *ex ante* probability that agreement is delayed until the deadline, $1 - F(\tilde{\delta})$, increases. In other words, if negotiating country's domestic constraint increases, agreement is more likely to take longer.

3.4 Testable Hypotheses

We derive some testable hypotheses from the above theoretical analysis. Theoretical implications are summarized as follows.

First, as the domestic constraints of countries involved in free trade negotiation are higher, time required for the completion of negotiation is more likely to be longer. More specifically, domestic constraints can be conceived as the minimum requirement for bargaining results to satisfy the demand from legislature and domestic interest groups.

Second, the relative share of economic surplus from free trade agreement is more likely to be higher as the minimum requirement for legislative approval is higher compared to the other country. In other words, the more domestic constraint for legislative approval, the more concession or share from the counterpart a country can get from free trade negotiation.

The main point is that in international bargaining situations such as free trade negotiation domestic political factors have important ramifications for their efficiency in terms of time required for agreement and further the distributional effect between countries.

In order to derive empirically testable hypotheses from these theoretical implications, we need to find a measure for domestic constraint. We use the seat share of the ruling party for domestic constraint. It is worthwhile to note that domestic political constraint is inversely related to the proportion of ruling party members in legislature. Members of ruling party usually follow party discipline except for politicians whose electorates are severely affected by free trade agreement. As the seat share of ruling party increases, domestic constraint tends to decrease.

Hypothesis 1 *As the seat share of the ruling party gets higher, it is more likely to take less time from the start to when the free trade agreement takes effect. Conversely, as the proportion of ruling party members in legislature decreases, it is more likely to take longer from start to the effectuation of FTA.*

In democratic states, election is held regularly and all the public offices have term limits. All the elected offices can be held responsible for their performance during their term. Hence, democratic states are more receptive to complaints toward government policies. Potential economic losers from free trade agreement influence negotiations through politicians.

Generally, the more democratic a state is, the larger domestic constraint it faces during international trade negotiations.

Hypothesis 2 *As the democratization index gets higher, it is more likely to take longer from the start to the effectuation of FTA. The less democratic countries are, the less likely to take long in reaching an agreement.*

These two hypotheses on negotiation period are novel in the sense that literature never seriously discussed them in spite of their practical importance. Next testable hypothesis is about expected share of economic surplus. While most literature focus on this issue, there was no consensus on it.

Hypothesis 3 *A country with more seat share of ruling party relative to the other country's ruling party seat share is more likely to get less share of economic surplus. Furthermore, given the seat share of ruling party in the counterpart country, the more seat share of ruling party, the less share of economic surplus. The converse is also true.*

While other studies (Iida, 1996; Mo, 1994, 1995; Putnam, 1988; Schelling, 1960; Tarar, 2001, 2005) also claimed similar argument, this hypothesis is never empirically tested previously.

4 Empirical Analysis

Data used in this research is collected from all FTAs that have been concluded so far. Authors made effort to use all available data.[10] Political and economic variables for the period during the FTA negotiation are collected.

[10]The data includes both bilateral FTAs and FTAs with economic communities.

4.1 Data

For analysis, we first collected 164 cases of bilateral and multilateral FTAs reported to WTO as of January 2007. We broadly divided the data into two categories, bilateral agreement and multilateral agreement, and analyzed the basic data for each cases. The basic data can be divided into three types as follows.

The first set of basic data is related to the negotiation process. We collected data on the point of inception, agreement, signing, and effectuation of each FTA and calculated the time spent for each phase. The data was collected from the database registered at WTO, annual report of FTAs by Trade Research Institute (TRI) at Korea International Trade Association (KITA), and the websites of each country's government.[11]

The second set is concerned with political variables of each country in each case, and aims to figure out the effect that a country's original political environment such as political system and election period has on the time period and results of FTA negotiations.

For the data, we collected government system index (government system), democratization index (dem), autocracy index (autoc), and integrated polity index (polity), which is a value that autocracy index is subtracted from democratization index.[12] The indices reflect the classification method of wikipedia, an Internet-based encyclopedia.[13] Also, as a political variable that may influence the negotiation period, we focused on domestic political election and collected the information on the period and results of general elections and presidential elections before and after the day of FTA settlement.[14] We figured out political structure during negotiation process analyzing presidential elections and their results, in other words, president's or prime minister's party, and its rate of votes obtained, proportion of seats se-

[11] "Trend and Outlook of FTAs of Major Countries" (2006, 2007), Trade Research Institute (TRI) at Korea International Trade Association (KITA).

[12] Three political indices other than government system, that is to say, democratization index, autocracy index, and integrated polity index reflect indices by country reported in "Polity IV Country Report" by Center for International Development and Conflict Management (CIDCM) at the University of Maryland. ($http://www.cidcm.umd.edu/polity/country\_reports/$)

[13] Source: $http://en.wikipedia.org/wiki/Countries\_by\_system\_of\_government$

[14] Source: Election result archive data base, Center on Democratic Performance (CDP), State University of New York at Binghamton. ($http://cdp.binghamton.edu/$)

cured by the dominant party in general elections, as well as number of seats taken by the party to which the head of government belongs to.

Based on the data collected, we conducted an analysis distinguishing the cases where the party to which the head of government belongs is identical to the majority party of assembly from the cases where the two are different. Even if the two are identical, if the party was not a majority party at the period of analysis, it is considered as divided government. Also, we figured out, among the FTA member countries in each case, what election in which country was the nearest to the date of effectuation of FTA, and the length of time between the point of effectuation and election. We set the point of election as exogenous deadline provided in the process of negotiation and domestic consent of a country involved, and the purpose of analysis using this is to figure out how the exogenous deadline influences the negotiation between two countries.

Lastly, in order to analyze the effect of FTA on trade and economic performance of the member countries, we collected related economic variables. First of all, we examined the change in constant GDP of each country and amount of bilateral trade between FTA member countries in periods before and after the point of FTA. For domestic GDP data, we used World Development Indicators of World Bank[15] and GDP database within CHELEM database of Centre d' Etudes Prospectives et d'Informations (CEPII),[16] and for amount of export between member countries, we cited International Trade database within CHELEM and Direction of Trade of International Monetary Fund (IMF).[17]

In order to test Hypothesis 1 and Hypothesis 2, we set the period of negotiation based on how many months have passed from the point of inception to the effectuation of FTA negotiation. As proxy variables for negotiation allocation ratio for test of Hypothesis 3, first, relative size of annual average amount of export from home to partner country was adopted

[15]World Bank, *World Development Indicators*, Washington DC: International Bank for Reconstruction and Development/The World Bank, various years.

[16]Chelem Database, Centre d' Etudes Prospectives et d'Informations (CEPII) *http : //www.cepii.fr/anglaisgraph/bdd/chelem.htm*

[17]International Monetary Fund, *Direction of Trade Year Book*, Washington DC: International Monetary Fund, various years.

as a proxy variable for home country's benefit. Second, the relative size of annual average amount of export from partner to home country was adopted as a proxy variable for partner country's benefit. For the proxy variables, values before and after the year of effectuation was compared. Third, proxy variable for negotiation allocation ratio was calculated from the ratio of the benefits of home country and partner country computed at the first and second steps above. The ratio greater than one indicates that the benefit of home country is greater than that of the partner country. The ratio smaller than one means the opposite.

4.2 Results of Empirical Analysis

4.2.1 Political Variables and Negotiation Period of FTAs

First of all, in order to test Hypothesis 1 and 2 drawn out from the theoretical model in Section 3, we conducted a regression analysis including negotiation period as a dependent variable and proportion of seats of the ruling party and democratization index of member countries as explanatory variables. The results are summarized in Table 1.

First, the higher the proportion of seats taken by the ruling party, the shorter the negotiation period. This result can be seen through the regression coefficient that constantly shows the same sign regardless of whether or not we control for the variables related to political institution of home country, such as presidential system dummy or parliamentary system dummy, or economic variables such as economic size of home country and relative size of the economy. This consistency of results corresponds with the prediction of Hypothesis 1 drawn from the theoretical model.

Second, the greater the democratization index of ruling party in home country and partner country, the longer the negotiation period. This result can also be seen from the coefficient that constantly shows the sign of the same direction, regardless of whether we control for the variables related to political institution of home country, such as presidential system dummy or parliamentary system dummy, or economic variables such as economic size of home country and relative size of the economy. This consistency of results corresponds with

Table 1: Regression Analysis of FTA Negotiation Period

Variable	I	II	III	IV	V
Seat share of ruling party	-7.39^{**}	-7.89^{**}	-7.92^{**}	-7.76^{**}	-8.29^{**}
in country A	(-2.27)	(-2.47)	(-2.54)	(-2.46)	(-2.72)
Seat share of ruling party	-5.62	-7.59^{**}	-7.58^{**}	-7.23^{**}	-7.31^{**}
in country B	(-1.45)	(-2.48)	(-2.50)	(-2.37)	(-2.45)
Democratization index	1.03^{**}	1.01^{**}	1.00^{**}	0.89^{**}	0.94^{**}
of country A	(2.22)	(2.19)	(2.29)	(2.05)	(2.22)
Democratization index	0.88^{*}	0.78	0.79^{*}	0.97^{**}	0.89^{**}
of country B	(1.82)	(1.66)	(1.71)	(2.15)	(2.10)
Presidency dummy	1.33	1.36	1.35	-0.71	
of country A	(0.62)	(0.64)	(0.64)	(-0.44)	
Parliamentary dummy	3.40	3.39	3.37		2.43
of country A	(1.49)	(1.49)	(1.50)		(1.44)
GDP of country A	-0.00	-0.00			
	(-0.80)	(-0.08)			
GDP ratio between	0.21				
the countries	(0.83)				
Negotiation with	-14.63^{***}	-14.99^{***}	-14.89^{***}	-14.91^{***}	-14.71^{***}
country groups	(-3.12)	(-3.23)	(-3.37)	(-3.33)	(-3.35)
Constant	29.48^{***}	31.83^{***}	31.76^{***}	32.78^{***}	32.08^{***}
	(4.46)	(5.34)	(5.44)	(5.59)	(5.55)
No. of observations	58	58	58	58	58
Adj. R^2	0.276	0.280	0.295	0.277	0.303
R^2	0.390	0.381	0.381	0.353	0.376

Note: Figures in parenthesis indicate t-ratio and $***$, $**$, and $*$ indicate significance at level of 1%, 5%, and 10%, respectively.

the prediction of Hypothesis 2 drawn from the theoretical model.

Third, variables related to political system of home country such as presidential system dummy or parliamentary system dummy, and variables related to economic size of home country or relative economic size of partner country do not seem to have a statistically significant effect on the negotiation period.

Fourth, compared to negotiations between individual countries, negotiations in which country groups are involved seem to shorten the time period for about 15 months.

4.2.2 Political Variables and Relative Size of Export Growth Ratio

In order to test Hypothesis 3 from the theoretical model in Section 3, we conducted a regression analysis using the relative size of export growth ratio of home and partner country as a dependent variable including explanatory variables such as the ruling party's proportion of seats in each member countries. The results are summarized in Table 2.

Table 2: Regression Analysis of Relative Size of Export Growth Ratio before and after Agreements

Variable	I	II	III	IV	V
Seat share of ruling party	-0.74^{*}	-0.67^{*}	-0.66^{*}	-0.55	-0.66^{*}
in country A	(-1.80)	(-1.87)	(-1.85)	(-1.55)	(-1.87)
Seat share of ruling party	0.95^{**}	0.89^{**}	0.87^{**}	0.82^{**}	0.87^{**}
in country B	(2.41)	(2.55)	(2.51)	(2.35)	(2.54)
Democratization index	-0.01				
of country A	(-0.23)				
Democratization index	0.02				
of country B	(0.28)				
Presidency dummy	-0.07	-0.01	0.03	-0.16	
of country A	(-0.27)	(-0.03)	(0.12)	(-0.87)	
Parliamentary dummy	0.32	0.38	0.40		0.38^{*}
of country A	(1.10)	(1.46)	(1.53)		(1.78)
GDP of country A	-0.00	-0.00			
	(-0.49)	(-0.76)			
Negotiation with	0.25	0.22	0.30	0.31	0.31
country groups	(0.42)	(0.56)	(0.78)	(0.80)	(0.82)
Constant	0.82	0.84	0.71	0.86^{*}	0.72
	(1.07)	(1.56)	(1.39)	(1.71)	(1.46)
No. of observations	58	58	58	58	58
Adj. R^2	0.072	0.104	0.111	0.089	0.128
R^2	0.202	0.198	0.189	0.153	0.189

Note: Figures in parenthesis indicate t-ratio and $***$, $**$, and $*$ indicate significance at level of 1%, 5%, and 10%, respectively.

Looking at the regression results summarized in Table 2, relative size of export growth effect from effectuation of FTA turns out to be more beneficial to home country, the lower the proportion of seats taken by the ruling party in home country and the higher the proportion of

seats taken by the ruling party in partner country. This result is constant irrespective of the inclusion of other control variables and is in accord with the prediction in Hypothesis 3 from the theoretical model. Other variables such as democratization indices of both countries, dummy variables related to political system in home country, home country's size of economy, and partner country's relative size of economy are proved not to be statistically significant.

5 Conclusion and Policy Implications

In this study, we examined how domestic political factors influence bilateral negotiations such as FTAs. We studied two kinds of impact, one is the impact that domestic political factors have on the negotiation period and the other is the impact on the outcome of negotiation. Results of theoretical and empirical analyses are as follows.

First, away from the traditional alternating offer bargaining game of Rubinstein (1982), in a negotiation theory model with delay, we showed that domestic constraints such as institutional requirement of ratification of assembly and threat of opposition to ratification of negotiation lengthen the negotiation period. In other words, inefficiency from the delay of negotiation increases with domestic political constraints. Domestic political constraint also influences the result of international negotiation. The benefit that can be expected from negotiation, in other words, level of concession from partner country increases with the level of domestic political constraint. Therefore, domestic political constraint influences the period and result of negotiation in opposite direction. That is to say, if level of requirement by assembly increases compared to partner country, inefficiency from the delay of negotiation increases while the result from negotiation becomes more beneficial to home country. On the other hand, assuming that the level of requirement by assembly is low in partner country, if level of requirement decreases compared to partner country, inefficiency from the delay of negotiation may be decreased but the result of negotiation itself will be unfavorable. Of course, it should be considered that the negotiation itself cannot be accomplished if the

requirement by assemblies in both countries are excessively higher than the economic benefit expected from the negotiation.

For empirical analysis, we constructed, from various sources, our own database of political and economic variables for countries that participated in FTAs that are concluded so far. Result from the analysis of this database is as follows. First, we used the proportion of seats taken by ruling party as a measure of domestic political constraint, and when we controlled other variables such as the type of government, GDP of the year prior to the inception of FTA negotiation, proportion of trade with partner country in GDP, and GDP ratio compared to partner country, the period of negotiation decreased as the proportion of seats taken by ruling party increased. This means that, since domestic political constraint moves in opposite direction to the proportion of seats taken by ruling party, the negotiation period shortens as domestic political constraint lessens. In other words, the level of concession from partner country increases as domestic political constraint increases.

From the above results from analysis, we can see that when determining which country to start FTA negotiation with top priority, we should consider the political condition of partner country, especially domestic political constraint. When identical economic effects are expected, negotiating with a country with lesser domestic political constraint compared to that in home country is more beneficial in respect to the result of negotiation.

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